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ABSTRACT

The study was designed to determine if there was an identifiable pattern of language deficit in 10 children (6 to 12 years old) undergoing treatment in a hospital inpatient psychiatry ward for behavioral and emotional problems. Ss were administered the standard hearing and speech clinic test battery which included the Binet Memory for Sentences, Token Test for Children, Expressive One Word Picture Vocabulary Test, and the Producing Words on Confrontation from the Clinical Evaluation of Language Function. Results showed difficulties in both word retrieval and short term memory for auditory information. Among the management strategies suggested were a self-contained classroom structure, and use of a speech/language pathologist. (SW)

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LANGUAGE DEFICITS IN CHILDREN WITH PSYCHIATRIC DISORDERS:

EDUCATIONAL IMPLICATIONS

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Researchers in both the field of psychiatry and speech-language pathology have examined the language performance of the adult psychiatric population (Whitehorn and Ziph, 1943: White, 1949; Weinstein, 1956; Critchley, 1964; Chapman, 1966: DiSimoni, Darley, Aronson, 1977). The majority of the literature has focused on the language of the adult schizophrenic patient. Deficits in language have been cited including deficits in short term memory and word retrieval. Chapman (1966) studied 40 patients ages 17-32 at Gartnavel Royal Hospital, Glasgow and the Royal Dundee Liff Hospital, Glasgow. His data suggests that schizophrenic patients suffer from "paroxysmal episodes of dissoulation in mental functioning in which their perceptual and cognitive processes are profoundly impaired". Characteristics cited by Chapman include increasing distractability caused by both internal and external factors and impairment in short term memory. His data also suggests that deficits in expressive language of these patients may be related to a defect in the automatic selection of appropriate words, an inability to screen out approximate or totally irrelevant words from entering short term memory prior to the act of speaking and a defect involving impairment in short term memory which renders the patient unable to connect different passages of verbal output in a logical sequence. He concludes that schizophrenic patients have a true

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deficit in word finding although it tends to be episodic in occurrence. Nancy Andreasen (1979) established a set of definitions for language behaviors of psychiatric patients to be used in DSM-III. She includes a total of 20 language behaviors including semantic and phonemic paraphasias. She defines phonemic paraphasias as "recognizable mispronounciations of the word because sounds or syllables have slipped out of sequence" and semantic paraphasias as "substitution of an inappropriate word during the effort to say something specific". Weinstein in 1956 concluded that the language of schizophrenics is paraphasic. Whitehorn and Zopf (1943) and Weinstein (1956) suggest that the psychiatric patient's language is neologistic. A neologism is defined by Anderson as a new word formation whose derivation cannot be understood and may reflect word finding difficulties.

Studies on the language of children with psychiatric disorders have concentrated primarily on children with more severe disorders such as autism, childhood schizophrenia and childhood psychosis. Data on children with milder psychiatric problems manifesting primarily in behavioral disorders has not been well documented. After administering speech/language evaluations to four children undergoing treatment in a hospital setting for behavioral and emotional problems, it was observed that these children demonstrated language deficits similar to those described by researchers in the adult psychiatric population, specifically word retrieval and short term memory deficits. The purpose of this study was therefore to collect

data on those children referred to the Department of Hearing and Speech for evaluation to determine if in fact there was an identifiable pattern of language deficit in children with behavioral or emotional disorders. If in fact deficits in short term memory and word retrieval were found to be common among this population it was felt that the speech/language pathologist could contribute to management plans for followup academic programs.

This study is divided into four parts. First a description of the patients included in the study will be presented. Then the measurements used in testing will be described followed by a discussion of the results of four specific tests measuring word retrieval and short term memory and a discussion regarding the implications of the findings with regard to classroom management of these children.

SUBJECTS

As stated previously this study originally included four children, the results of which were presented at the American Speech Language Hearing Association National Convention in Cincinnati, Ohio, November, 1983. Since that time six other children have been identified who fit the original profile. The final study includes 4 girls and 6 boys undergoing treatment in a hospital inpatient psychiatry ward for behavioral and emotional problems. Disorders included primary attention disorders associated with depression, hyperactivity, anxiety, aggressive and bizarre behaviors and impulsivity. Subjects who presented with severe retardation, documented neurological damage as

measured by a CT scan or severe psychiatric disorders i.e. dimentia were excluded from the study. The subjects were referred to the Hospital's Hearing and Speech Department for audiological and speech/language evaluations to rule out underlying language disorders which might be contributing to their behavioral or emotional difficulties. All children had been experiencing academic difficulties. One child had previously been identified a speech/language delayed and had been receiving speech therapy for an articulation disorder. Three children had been in special education programs. The mean age was 10 years 5 months with a range of six years three months to twelve years nine months. Hearing was normal in all 10 children. One child had a history of recurrent middle ear pathology and had had bilateral tympanostomy tubes inserted to manage middle ear fluid. All subjects received a psychological or neuropsychological evaluation. Three children showed deficits on this testing. One child was diagnosed as mildly retarded and another as mild-moderately retarded. All children had normal CT scans. Behavior during the speech/language evaluation for six children was good. These six were cooperative and concerned regarding their performance. The remaining four were difficult to test due to behavioral difficulties, but when contingencies were used their compliance improved. The purpose of the referral was for identification purposes only. No treatment was provided for these children by the Department of Hearing and Speech since all children were actively involved in a full day academic routine on the ward. Recommendations for management were included in the speech/language evaluation report when appropriate.

TEST BATTERY

All ten children were administered the standard clinic test battery which includes measurements of short term auditory memory, auditory comprehension, expressive language and the speech parameters of articulation, voice quality and fluency. Extension testing was done in specific areas of deficit as needed. (Table I).

The following test measurements are of interest to this study: Binet Memory for Sentences, Token Test for Children, Expressive One Word Picture Vocabulary Test and the Producing Words on Confrontation from the Clinical Evaluation of Language Function.

The Expressive One Word Picture Vocabulary Test (EOWPVT) by Morrison F. Gardner (1979) is designed to obtain an estimate of the child's verbal intelligence by means of his acquired one word expressive picture vocabulary. It was standardized on 1600 children ages 2 years through 11 years 11 months. The child is presented with individual plates of simple black and white line drawings which become progressively more difficult with regard to level of vocabulary. The EOWPVT according to the test manual, can also be used to assess the child's speech articulation and auditory-visual association ability. We have found it useful for measuring word finding ability. To test for word finding the child's response style is examined during administration. Attention is paid particularly to those items below the child's chronological age or the age of expected performance based on other language scores. If the child responds frequently with

latency or uses either a semantically or phonemically related label when responding, he is offered specific cues to determine if, when given these cues, he can retrieve the appropriate label. An example of a semantically related label would be 'fork' for 'spoon'. An example of a phonemically related label would be 'toon' for spoon. Two types of cues are provided: semantic and phonemic. A semantic cue is one in which the examiner provides a cue regarding the function, color, class or other descriptive aspect of the label. For example a semantic cue for the label 'pen' would be 'This is something you write with". A phonemic cue is one in which the examiner provides the subject with the initial phoneme or syllable of the word. A phonemic cue for the label 'pen' would thus be 'This is a p_\ '. If the child retrieves the label once given the cue he is given credit for knowing the label but a notation is made regarding his retrieval difficulties. No objective measure for identification of word finding problems on the EOWPVT is available. Therefore a subjective assessment is made based on a comparison of latency of response and the number of latent responses compared with the level of performance without cues. Extension testing using the CELF Producing Names on Confrontation is then pursued.

The Producing Names on Confrontation subtest (Semel and Wiig, 1980) was designed to evaluate the accuracy, fluency and speed in naming colors, forms and color-form combinations in a sustained confrontation naming task. It probes accuracy in the rapid retrieval of common words, fluency and agility in

formulating words in rapid naming, and speed of word retrieval and identification. The CELF was standardized on 1400 children from kindergarten through 12th grade. Norms are provided for each subtest so that the entire battery need not be administered. On administration the child is presented with a plate containing five lines of different colored squares, triangle and circles. The colors are red, black, yellow and blue. The task is timed and the child is aware that he is being timed. He is instructed to state the color and shape of each item as quickly as he can. Hesitations, revisions, and substitutions or deletions are scored as errors.

To test the child's short term memory ability two tests were administered: the Binet Memory for Sentences and the Token Test for Children. The Binet sentences used are those from the Stanford Binet Test of Intelligence. On the Binet sentences the child is given an auditory stimuli which he is required to repeat verbatim. Sentences become increasingly longer and more complex and range in difficulty from four through 13 years. No repetition of the stimuli is offered. The child's level of performance is that level at which he repeats one of two sentences correct. Two sentences are provided at each level.

The Token Test for Children (DiSimoni, 1978) was normed on 1304 children ranging in age from three to twelve and one half years. It is described as a rapid screening device serving to provide gross measurements of functional language adequacy in the semantic sense and as an indicator of the need for further testing of lexicon and syntax. Parts I through IV of the Token

required that the subject retain up to six critical elements including the size, shape and color of the tokens. Auditory commands become increasingly longer with each subtest. On Part V of the Token the subject is required to retain four critical elements. This last set of auditory commands is embedded with syntax. (Example: Put the red circle on the green square). The child's performance on Part V of the Token can be examined to determine if in fact the child retained all critical elements but lost structural detail or if he demonstrated difficulty with retention of content detail. The Binet sentences can be evaluated in the same way. For example, if when presented with the stimuli sentence "We are going to buy some candy for mom" the child responds "We are going to buy something for dad" he is demonstrating loss of content detail. If however he repeats "We bought some candy for mom" his response is classified as loss of structured detail since he altered the verb tense. On the Token Test an example of loss of content detail on Part V for the first command "Put the red circle on the green square." would be accurately placing one token on another as instructed but using the wrong shape or color token. If the correct token was placed next to another token instead of on, the subject would be demonstrating loss of structural detail. Often times the child will demonstrate both loss of content detail and structural detail on the Binet Sentences and the Token Test. In this instance additional testing is needed to determine the adequacy of the child's receptive management of syntax.

RESULTS

As indicated in Table II the performance of these subjects varied from severely delayed to above average. While language profiles varied, the subjects share common deficits in word retrieval on the EOWPVT and the CELF, and short term memory deficits for linguistic information on the Binet Sentences and the Token Test.

Word retrieval deficits noted on the EOWPVT were characterized by response latency, phonemic and semantic paraphasias and occasional use of carrier phrases. Seven subjects demonstrated difficulties in this area. For example Subject 8 presented with difficulty when asked to label a picture of several musical instruments. The correct label was 'instruments'. Subject 8 first stated "beagle" the revised his response to "bugle" and finally stated "orchestra". His first error is an example of a phonemic paraphasia. His second and final responses are examples of semantic phonemic paraphasias. This same subject hesitated when presented with a picture of binoculars and then proceeded to verbally search for the correct label. ("This is some kind of scope - a binocular"). Subject 9 demonstrated difficulty retrieving the label 'cash register'. When presented with the picture he first responded "money". When provided with the semantic cue "You put money in it" the subject responded "cash register". Subject 7 often used a carrier phrase which was felt to be a compensatory strategy used to afford extra time to retrieve the appropriate label. When presented with the

stimuli he often began his response by saying "this is a ___" or "These are ___". This same subject demonstrated additional retrieval difficulties as demonstrated by his use of paraphasic errors. For example, he labeled a picture of a well as a "lake" which is an example of a semantic paraphasia before retrieving the correct label. When presented with a picture of a helicopter, he first responded "elicopter" which is an example of a phonemic paraphasia. Verbal search strategies were also noted for this patient. Upon presentation of a picture of a square this patient responded by saying "a block (hesitation) a shape (hesitation)"a", then snapping his fingers "a square".

The CELF, Producing Words on Confrontation subtest, as indicated previously, was administered to those subjects who demonstrated retrieval difficulties on the EOWPVT. Three children who showed retrieval difficulties on the EOWPVT were not able to complete the Producing Words on Confrontation subtest due to attentional and behavioral difficulties. For those subjects who could complete the Confrontation subtest, responses were characterized by frequent hesitations, substitution of color or shape labels, or reversal of the color/shape labels. These children also required more time than normal for completing this task. Self-correction strategies were often observed; however, the subject is scored on the basis of his initial response. An example of Subject 9's responses on the Confrontation subtest indicated reversals of the color/shape labels on the last four items as well as frequent mislabelling of the color or shape of the item. For example, he first labeled item 20 "red" and then

self corrected to label the item correctly a "yellow triangle".

On the Binet Sentences, 9 of the ten subjects scored below average. Three subjects demonstrated loss of content detail, none lost structural detail exclusively and six demonstrated both loss of content and structural detail. For example, when presented with the stimuli: Fred asked his father to take him to see the clowns in the circus" Subject 9 responded "Fred asked his dad to take him to see the clowns in the park" demonstrating loss of content detail. Subject 7 responded "Fred asked his father to ask him to take him to the clowns" demonstrating loss of structural as well as content detail.

Eight of the nine subjects who had difficulty with short term memory on the Binet Sentences also had difficulty on the Token Test for Children. Their results indicated that all subjects demonstrated loss of content detail on Subtests I through IV. Two subjects demonstrated loss of content detail on Subtest 5, none demonstrated loss of structural detail exclusively, and six demonstrated loss of both content and structural detail. Extension testing was completed to determine the adequacy of management of syntax at the receptive level for those children demonstrating loss of structural detail on Subtest V. Results of that testing are not discussed here since results are not relevant to the purpose of this study.

DISCUSSION

Test results suggest that these children have difficulties with both word retrieval and short term memory for auditory

information. Deficits in both these areas place these children at risk for learning difficulties in the classroom. In the traditional classroom setting, much of learning is dependent upon good listening skills. Crucial subjects i.e. reading, spelling and writing are based upon acquisition of phonics which heavily stresses the auditory channel. The child with short term auditory memory deficits is therefore at risk for missing important details in the classroom which will impact on his ability to learn as well as his cognitive ability permits. Word retrieval deficits will impact upon the child's reading skills, spelling skills, writing skills, test taking skills and his ability to respond aloud. For these reasons the following classroom management strategies are recommended.

Management strategies for children with short term memory deficits are adapted from those prepared by Noel Matkin (personal communication) for use with hearing impaired and children with auditory processing difficulties. They include the following:

1. Classroom Placement: A self-contained structured situation is more effective for children with listening difficulties. In the regular classroom, preferential seating is a major consideration in managing such children. Children with listening and short term memory deficits should be seated away from hall noise and not more than 10 feet from the teacher.

2. Focus Attention: Call the child by name to focus attention upon classroom activities.

3. Check Comprehension: Ask questions related to the subject under discussion to make certain that they are following and understanding the discussion.

4. Rephrase and Restate: Encourage the child to indicate when they do not understand what has been said. Rephrase the question or statement when necessary, simplifying the grammar and repeating the original information.

5. Write Instructions: Help them by writing assignments on the board so they can copy them in a notebook.

6. Monitor Efforts: Provide short intensive periods of instruction with breaks during which the child can move around.

7. Use of Tape Recorder: Encourage the child to tape record lessons in school so that they can be relistened to at home.

Suggestions for classroom management of children with word retrieval difficulties are adapted from clinical techniques with aphasic patients. They include:

1. Testing in the classroom should be done in sentence completion or multiple choice type format.

2. The child with retrieval difficulties should not be required to read aloud in the classroom. If he does read aloud, he should not be penalized for difficulties with word retrieval.

3. When required to respond aloud in the classroom children with retrieval difficulties should be given a few moments to formulate their response. If the child can write, he should be encouraged to write notes to help prepare his response. He should then be allowed to refer to his notes when responding.

4. When the child is experiencing difficulties with retrieval he should be provided with semantic or phonemic cues and encouraged to self cue by describing the item, etc.

The services of a speech/language pathologist should be employed to assist these children whenever possible. In therapy a child can be taught compensatory strategies for both retention and retrieval difficulties. Compensatory strategies for short term auditory memory deficits would include training in reauditorization i.e. self-rehearsal of auditory information or repetition of salient features. The child can be trained to

identify salient features and to make written notes of these features to aid his memory. Additional pragmatic situations in which the child can be both the receiver and sender of auditory information can be set up through use of such activities as barrier games to train the child to attend to details. Also, key words for lessons in the classroom can be introduced by the speech/language pathologist prior to presentation of the information in class.

Strategies to aid retrieval such as self cueing can also be taught to facilitate the child's word finding capabilities. The child's retrieval skills can be sharpened in therapy through word association tasks, rapid naming drills and sentences completion tasks. Self-awareness of the child's difficulties can be increased in an effort to improve the child's ability to self-monitor communication breakdown. Self-monitoring skills can be sharpened through use of auditory feedback and training to sensitivity of the listener's reaction.

CONCLUSION

The data presented suggests two things: children with psychiatric disorders appear to demonstrate language deficits similar to that of the adult population; and, they have specific language deficits which negatively impact upon their classroom performance. The basis for these deficits is difficult to determine. These children may well have had inherent language disorders which resulted in classroom failure and consequently led to behavioral difficulties. On the other hand, attentional

deficits diagnosed in these childrenmay impact upon their ability to maintain focused attention in listening situations or even to retrieve specific letters and words. Regardless of the basis for these deficits, the findings are felt to have significant implications for classroom management and the need for support services. It is recommended that children who exhibit behavioral or learning difficulties be referred for speech/language testing so that specific language deficits can be identified and appropriate recommendations can be made.

TABLE I.: TEST BATTERY

Auditory Memory:	Digits - Wechsler Intelligence Scale for Children - Revised
	Sentences - Binet Memory for Sentences (Stanford Binet)
Auditory Comprehension:	Vocabulary - Peabody Picture Vocabulary Test -Revised, Form M (PPVT-R)
	Commands - Token Test for Children
	Stories - Binet Story (Stanford Binet)
Expressive Language:	Vocabulary - Expressive One Word Picture Vocabulary Test (EOWPCT)
	Formulation - Spontaneous Language Sample
	Word Finding - Expressive One Word Picture Vocabulary Test (EOWPVT)
Articulation:	Goldman Fristoe Test of Articulation, Spontaneous Speech Sample

TABLE II: RANGE OF SCORES

(Converted to T scores: T score X = 50, SD = ± 10)

Tests	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8	S_9	S_{10}
Ages:	7.6	12.9	8.1	8.11	8.7	11.3	9.9	9.1	12.8	6.3
WISC-R Digits	40	50	30	DNT	27	50	47	33	DNT	DNT
PPVT-R	24	65	25	67	23	47	33	45	44	27
EOWPVT	27	48	27**	15**	21**	51**	24**	47**	43**	23
Cell Confrontation Naming*	DNT	DNT	CNT	CNT	CNT	2'0" K	2'55" K	1'52" 1st gr.	3'0" K	DNT
Binet Sentences*	4 yrs	7 yrs	4 yrs	4 yrs	4 yrs	11 yrs	7 yrs	7 yrs	5 yrs	4 yrs
Token Test	49	64	37	38	51	56	42	43	7	32

*No T Scores available
**Retrieval difficulties evident

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